The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method for simulating a visual defect to a user comprising:

obtaining an input digital image;

selecting a visual defect filter set to apply to said input digital image;

processing said input digital image with said visual defect filter set to generate a modified digital image; and

displaying said modified digital image to the user to simulate the visual defect.

2. The method as recited in Claim 1, wherein said input digital image is stored in the memory of a computer.

3. The method as recited in Claim 1, wherein said input digital image is a live image captured by the user.

4. The method as recited in Claim 1, wherein said input digital image is captured via video camera.

5. The method as recited in Claim 4, wherein said video camera is mounted on the head of the user.

6. The method as recited in Claim 1, wherein said input digital image is captured and processed in stereo.

7. The method as recited in Claim 1, further comprising storing said modified digital image in the memory of a computer.

8. The method as recited in Claim 7, wherein said modified stored image is processed to represent various fields of view.

9. The method as recited in Claim 8, further comprising tracking at least one of the user's eyes while the user views the modified image to determine the user's point of fixation wherein the user's point of fixation guides the selection of an image from the set of stored preprocessed images in various fields of view.

10. The method as recited in Claim 1, further comprising tracking at least one of the user's eyes while the user views the modified image to determine the user's point of fixation wherein the displayed image is dynamically processed with the eye tracking data to maintain a constant orientation between the simulated visual defect and the user's point of fixation.

11. The method as recited in Claim 1, wherein said modified image is displayed in a wide field of view stereographic display.

12. The method as recited in Claim 1, wherein said modified image is displayed on a head mounted display.

13. The method as recited in Claim 10, wherein said modified image is displayed on a see-through surface.

14. The method as recited in Claim 1, wherein said visual defect is selected from the group consisting of macular degeneration, albinism, amblyopia, aniridia, brain tumor, cataract, coloboma of the choroid, colorblindness, corneal irregularity, diabetic retinopathy, eclipse burn, glaucoma, hyphema hemorrhage, vitreous hemorrhage, pre-retinal hemorrhage, migraine, retinal tear and detachment, retinitis pigmentosa, Stargardt's disease, strabismus, subluxation of lens, vascular occlusion, branch retinal arteriole, central retinal occlusion, vitreous floaters and the effects of therapeutic modalities.

15. The method as recited in Claim 1 wherein said input image is modified to simulate a scotoma.

16. The method as recited in Claim 1 wherein said input image is modified to simulate a cataract.

17. The method as recited in Claim 1 wherein said input image is modified to simulate a reduction in peripheral vision.

18. A computer-readable medium having computer-executable instructions for performing the method recited in Claim 1.

19. A computer-readable medium having computer-executable instructions for performing the method recited in Claim 9.

20. A computer-readable medium having computer-executable instructions for performing the method recited in Claim 10.

21. A set of pre-modified digital images embodied on a computer-readable memory medium generated to simulate a visual defect using the computer executable instructions as recited in Claim 18.

22. A method for simulating a visual defect to a user comprising:

tracking at least one of the user's eyes while the user views an image to determine the user's point of fixation;

selecting a mask image to simulate a visual defect; and

displaying said mask image to the user wherein the mask image position is determined by the user's point of fixation to generate two superimposed images which simulates a visual defect.

23. The method of Claim 22, wherein said mask image is displayed to the user on a see-through surface.

24. The method of Claim 22, further comprising obtaining an input digital image, merging said mask image with said input image and displaying said merged image to simulate a visual defect.

25. A computer system comprising a processor, a memory, and an operating environment, the computer system operable to perform the method as recited in Claim 1.

26. A computer system for simulating visual defects to a user, the computer system comprising:

means for obtaining an input digital image, a memory, a processing unit, means of modifying said input image to simulate a visual defect and a display device to display said modified image to the user to simulate the visual defect.

27. The computer system as recited in Claim 26, further comprising an eye tracking device, wherein the eye tracking device measures the user's point of fixation while the user views said displayed image and wherein said eye tracking device is interfaced with said processing unit.

28. The computer system as recited in Claim 26, wherein at least one of the system components is accessed remotely on a network.